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=> d his

     (FILE 'HOME' ENTERED AT 15:46:52 ON 22 MAR 2007)
     FILE 'CA' ENTERED AT 15:47:01 ON 22 MAR 2007
L1     50 S CALORIMET? AND (MICROTIT? OR MICROWELL OR MULTIWELL OR MICROPLATE)
L2    336 S CALORIMET? AND ((PHARMACEUTICAL OR DRUG)(2A)(SCREEN? OR TEST? OR
          EVALUAT? OR DISCOVER?) OR COMBINATOR? OR HYBRIDIZ?)
L3      3 S L2 AND EQUILIBRAT?
L4  23743 S CALORIMET? AND (MOLECUL?(2A)INTERACT? OR REACT?)
L5    106 S L4 AND EQUILIBRAT?
L6     20 S L2 AND(SEAL? OR ISOLAT?)
L7    173 S L1,L3,L5-6
L8    136 S L7 AND PY<2004
L9      8 S L7 NOT L8 AND PATENT/DT
     FILE 'BIOSIS' ENTERED AT 15:59:47 ON 22 MAR 2007
L10    50 S L8
     FILE 'MEDLINE' ENTERED AT 16:00:07 ON 22 MAR 2007
L11    28 S L8
     FILE 'CA, BIOSIS, MEDLINE' ENTERED AT 16:01:03 ON 22 MAR 2007
L12   187 DUP REM L8 L9 L10 L11 (35 DUPLICATES REMOVED)

=> d bib,ab,kwic l12 1-187

L12  ANSWER 8 OF 187  CA  COPYRIGHT 2007 ACS on STN
AN   141:25623  CA
TI   Apparatus and methods for measuring reaction byproducts
IN   Neilson, Andy C.; Sweeney, Michael R.
PA   USA
SO   U.S. Pat. Appl. Publ., 32 pp., Cont.-in-part of U.S. Pat. Appl. 2002
     146,345.
PI   US 2004110301        A1    20040610    US 2003-623483         20030718
     US 6991765           B2    20060131
     US 6835574           B2    20041228
     US 6821787           B2    20041123
PRAI US 2000-249931P      P     20001117
AB   App. and methods for measuring byproducts produced by reactions between
     chem. and/or biochem. reactants.  The app. include devices for detecting
     reactive byproducts, and multi-well sample plates for supporting samples
     for use with such devices.  The methods include measurement strategies
     and data processing techniques for reducing noise in measurements of
     reactive processes.  The app. and methods may be particularly suitable
     for extg. data from small differential measurements, and for monitoring
     chem. and physiol. processes.

L12  ANSWER 13 OF 187  CA  COPYRIGHT 2007 ACS on STN
AN   139:266501  CA
TI   Apparatus and method for a nanocalorimeter for detecting chemical
     reactions
IN   Bell, Alan G.; Bruce, Richard H.; Elrod, Scott A.; Peeters, Eric;
     Torres, Francisco E.
PA   Xerox Corporation, USA
SO   U.S. Pat. Appl. Publ., 26 pp.
PI   US 2003186453        A1    20031002    US 2002-114611         20020401
     US 7141210           B2    20061128
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	US 2003186454	**A1**	**20031002**	**US 2002-303446**	**20021122**
	US 2003186455	**A1**	**20031002**	**US 2002-303500**	**20021122**
	US 2006078999	A1	20060413	US 2005-149632	20050610
	US 2005238080	A1	20051027	US 2005-167748	20050627
	US 2005254994	A1	20051117	US 2005-167612	20050627
	US 2005265898	A1	20051201	US 2005-167635	20050627
PRAI	US 2002-114611	A2	20020401		

AB A nanocalorimeter array for detecting chem. **reactions** includes at least one thermal isolation region residing on a substrate. Each thermal isolation region includes at least one thermal **equilibration** region, within which resides a thermal measurement device connected to detection electronics. The nanocalorimeter can be used for measuring the heat released or absorbed during chem. **reactions**.

L12 ANSWER 32 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 138:1995 CA
TI Microcalorimetric detection of analytes and binding events
IN Roach, Jeffrey Shawn; Wolter, Andreas
PA Proligo LLC, USA
SO PCT Int. Appl., 60 pp.

PI	**WO 2002099386**	**A2**	**20021212**	**WO 2002-US18200**	**20020607**
	US 2003059807	**A1**	**20030327**	**US 2002-165854**	**20020607**
PRAI	US 2001-296685P	P	20010607		

AB The present invention comprises methods for detecting specific binding interactions through measuring the heat of binding generated when members of specific binding pairs interact with each other. The invention also comprises methods to detect analytes in a soln. through measurement of the heat of binding or reaction generated from the interaction of the analytes with binding or reaction partners. In addn., the invention comprises detection devices that consist of spatially addressable arrays of thermistors, which are useful in the multiparallel thermal anal. of samples. The anal. methods and devices described are particularly useful in the anal. of nucleic acids.

L12 ANSWER 47 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 138:317057 CA
TI An autosampling differential scanning **calorimeter** instrument for studying **molecular interactions**
AU Plotnikov, Valerian; Rochalski, Andrew; Brandts, Michael; Brandts, John F.; Williston, Samuel; Frasca, Verna; Lin, Lung-Nan
CS MicroCal, LLC, Northampton, MA, 01060, USA
SO Assay and Drug Development Technologies (**2002**), 1(1-1), 83-90
AB A new ultrasensitive differential scanning **calorimeter** (DSC) instrument is described, which utilizes autosampling for continuous operation. High scanning rates to 250 deg/h with rapid cooling and **equilibration** between scans facilitates higher sample throughput up to 50 samples during each 24 h of unattended operation. The instrument is suited for those pharmaceutical applications where higher throughput is important, such as **screening drug** candidates for binding const. or screening soln. conditions for stability of liq. protein formulations. Results are presented on the binding of five different anionic inhibitors to RNase A, which included cytidine 2'-monophosphate (2'CMP), 3'CMP, uridine 3'-monophosphate, pyrophosphate, and phosphate. Binding consts. KB (or

dissocn. consts. Kd) are obtained from the shift in the transition temp. TM for RNase thermal unfolding in the presence of ligand relative to the transition temp. in the absence of ligand. Measured binding consts. ranged from 155 M-1 (Kd = 6.45 mM) for the weak-binding phosphate anion to 13,100 M-1 (Kd = 76.3 μM) for the strongest binding ligand, 2'CMP. The DSC method for measuring binding consts. can also be extended to ultratight interactions involving either ligand-protein or protein-protein binding.

L12 ANSWER 51 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 135:341157 CA
TI Microphysiometer
IN Verhaegen, Katarina
PA Interuniversitair Micro-Elektronica Centrum, Belg.
SO PCT Int. Appl., 43 pp.

PI	**WO 2001085901**	**A2**	**20011115**	**WO 2001-BE81**	**20010508**
	US 2004038228	A1	20040226	US 2003-276043	20030602
PRAI	US 2000-202475P	P	20000508		

AB The present invention is related to an array device for monitoring the effect of a phys. or chem. stimulus on multiple small samples, said array device comprising a supporting substrate at least two array elements that are sepd. from each other by a **isolation** zone, said array elements comprising:• A receiving zone arranged to provide a contact between said one of said samples and said phys. or chem. stimulus, said receiving zone having a cross-section smaller than 10 mm,• A heat detection means arranged to perform a measurement of heat between said receiving zone and a ref., and said **isolation** zone being formed by at least part of said supporting substrate characterized in that said supporting substrate has sufficient strength to support said array device and said **isolation** zone is arranged to thermally **isolate** said array elements.

L12 ANSWER 72 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 132:157494 CA
TI A stepwise specific heat technique for dynamic DSC
AU Cassel, Bruce
CS Thermal and Elemental Analysis Products, PerkinElmer Instruments, Norwalk, CT, 06859-0003, USA
SO American Laboratory (Shelton, Connecticut) (**2000**), 32(1), 23-26
AB A method for sepg. thermodn. and kinetic effects, called stepwise sp. heat, is incorporated into the StepScan software program. A series of very rapid sp. heat measurements, each over a short defined temp. interval, is performed while allowing the heat flow to **equilibrate** between steps. This method is demonstrated for sp. heat measurements taken during crystn., moisture loss, **reactions**, and a glass transition.

L12 ANSWER 76 OF 187 BIOSIS on STN
AN 1999:490422 BIOSIS
TI Colorimetric and fluorimetric **microplate** assays for legumain and a staining reaction for detection of the enzyme after electrophoresis.
AU Johansen, Harald T.; Graham Knight, C.; Barrett, Alan J. [Reprint author]
CS MRC Molecular Enzymology Laboratory, Babraham Institute, Babraham,

Cambridgeshire, CB2 4AT, UK
SO Analytical Biochemistry, (**Sept. 10, 1999**) Vol. 273, No. 2, pp. 278-283.
AB The cysteine endopeptidase legumain was recently discovered in mammalian cells, predominantly localized in the lysosomal system where it is believed to contribute to antigen processing for MHC class II. Here we describe rapid assay procedures for the enzyme in 96-well **microplates** with two substrates, a novel compound, succinyl-Ala-Ala-Asn-4-methoxy-2-naphthylamide, and benzyloxycarbonyl-Ala-Ala-Asn-4-methyl-7-coumarylamide. Both substrates are suitable for fluorimetric assays, but the naphthylamide also allows colorimetric detection of legumain activity, since the released 4-methoxy-2-naphthylamine gives a red product when coupled with the Fast Garnet color reagent. We show that the naphthylamide substrate can be used to visualize active legumain after electrophoresis in polyacrylamide gel. Both substrates provide assays that are reproducible and sufficiently sensitive to allow the assay of legumain in crude samples such as tissue homogenates, although the coumarylamide is the more sensitive. The specificity of both assay methods for legumain was verified by the lack of inhibition by E-64 and total inhibition by egg white cystatin.

L12 ANSWER 78 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 131:3151 CA
TI Application of microcalorimetry for recording basal metabolic and Na+, K+-ATPase activity in LLC-PK1 cells, a model for the renal tubular epithelial cell
AU Xie, Yi; Karlsson, Hakan; DePierre, Joseph W.; Nassberger, Lennart
CS Unit for Biochemical Toxicology, Department of Biochemistry, Wallenberg Laboratory, Stockholm University, Stockholm, S-106 91, Swed.
SO Journal of Pharmacological and Toxicological Methods (**1999**), Volume Date 1998, 40(3), 137-143
AB In the present study we have employed a microcalorimetric procedure to measure the heat generated by a porcine renal tubule cell line (LLC-PK1) and its Na+, K+-ATPase. **Microplates** with an area of 2.2 cm2 were found to be optimal in terms of producing sufficient heat and a steady-state power curve. We compared the rate of heat prodn. by cells in suspension and on monolayers and found a much lower value in suspension, i.e., 1.42 ± 0.2 vs. 2.54 ± 0.19 μW/μg DNA. Ouabain, the specific Na+, K+-ATPase inhibitor, caused a redn. in this heat output. The maximal inhibition in cell suspensions was 40% and remained unchanged with as much as 100 μM ouabain, the highest concn. tested. With cells cultured on **microplates**, ouabain in the concn. interval 0.1-3 μM caused a 25% inhibition of heat output. With 25-100 μM ouabain, a 50% inhibition was obsd. and at higher concns., no further inhibition occurred. Furthermore, upon removal of ouabain, full recovery of the Na+, K+-ATPase was obsd., a process that could easily be monitored by using cell monolayers cultured on **microplates**.

L12 ANSWER 83 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 132:73141 CA
TI Silicon microphysiometer for high-throughput **drug screening**
AU Verhaegen, Katarina; Baert, Kris; Puers, Bob; Sansen, Willy; Simaels, Jeannine; Van Driessche, Willy; Hermans, Lou; Mertens, Robert P.
CS IMEC, Louvain, Belg.

SO Proceedings of SPIE-The International Society for Optical Engineering (**1999**), 3606(Micro- and Nanofabricated Structures and Devices for Biomedical Environmental Applications II), 20-27

AB We report on a micromachined silicon chip that is capable of providing a high-throughput functional assay based on **calorimetry**. A prototype twin microcalorimeter based on the Seebeck effect has been fabricated by IC technol. and micromachined postprocessing techniques. A biocompatible liq. rubber membrane supports two identical 0.5 X 2 cm(superscript 2) measurement chambers, situated at the cold and hot junction of a 666-junction aluminum/p+-polysilicon thermopile. The chambers can house up to 10(superscript 6) eukaryotic cells cultured to confluence. The advantage of the device over microcalorimeters on the market, is the integration of the measurement channels on chip, rendering microvolume **reaction** vessels, ranging from 10 to 600 (mu) l, in the closest possible contact with the thermopile sensor (no springs are needed). Power and temp. sensitivity of the sensor are 23 V/W and 130 mV/K, resp. The small thermal inertia of the microchannels results in the short response time of 70 s, when filled with 50 (mu) l of water. Biol. expts. were done with cultured kidney cells of Xenopus laevis (A6). The thermal **equilibration** time of the device is 45 min. Stimulation of transport mechanisms by reducing bath osmolality by 50% increased metab. by 20%. Our results show that it is feasible to apply this large-area, small-vol. whole-cell biosensor for **drug discovery**, where the binding assays that are commonly used to provide high- throughput need to be complemented with a functional assay. Solns. are brought onto the sensor by a simple pipet, making the use of an industrial **microtiterplate** dispenser feasible on a nx96-array of the microcalorimeter biosensor. Such an array of biosensors has been designed based on a new set of requirements as set forth by people in the field as this project moved on. The results obtained from the prototype large-area sensor were used to obtain an accurate model of the **calorimeter**, checked for by the simulation software ANSYS. At present, the sensor chip has been designed. Future publication(s) will deal with this part of the work.

L12 ANSWER 106 OF 187 CA COPYRIGHT 2007 ACS on STN

AN 126:191490 CA

TI Microcalorimetric measurements of differential heats of adsorption on **reactive** catalyst surfaces

AU Spiewak, B. E.; Dumesic, J. A.

CS Department of Chemical Engineering, University of Wisconsin-Madison, Madison, WI, 53707, USA

SO Thermochimica Acta (**1997**), 290(1), 43-53

AB Techniques are presented for measurement of differential heats of adsorption on **reactive** catalyst surfaces using heat-flux **calorimetry**. Samples are prepd. ex-situ in ultra-pure flowing gases and then sealed in Pyrex capsules. Special **calorimetric** cells are employed to break the sample capsule after thermal **equilibration** of the sample with the **calorimeter**. In this manner the clean sample is exposed rapidly to the adsorbing gas, minimizing surface contamination. Initial heats of CO and H2 adsorption at 403 K on Pt/SiO2 catalysts obtained using the present technique (135 and 100 kJ/mol. resp.) were in agreement with results reported in the literature using std. **calorimetric** procedures.

Initial heats measured in this study for CO adsorption at 308 K on reduced Ni powders (120 kJ/mol) and on nickel samples contg. metallic potassium (200 kJ/mol) corresponded to values in the literature from ultrahigh vacuum studies of CO adsorption on Ni single crystal surfaces. The initial heat of N2 adsorption at 453 K on reduced iron detd. in this study (200 kJ/mol) was in agreement with results obtained in ultrahigh vacuum measurements of metallic iron single crystal surfaces. These results, for catalyst systems that are sensitive to traces of oxygen-contg. species, provide strong evidence that the exptl. techniques employed in the present study allow clean metallic surfaces to be maintained during microcalorimetric adsorption studies.

L12 ANSWER 108 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 129:321053 CA
TI Use of isothermal microcalorimetry in the early detection of potential drug formulation incompatibilities
AU Phipps, Mark A.; Winnike, Richard A.
CS Glaxo Wellcome Inc, Research Triangle Park, NC, 27709, USA
SO Proceedings of the Workshop on the Microcalorimetry of Energetic Materials, Leeds, UK, Apr. 7-9, 1997 (**1997**), M1-M14 Publisher: Defence Research Agency, Sevenoaks, UK.
AB Drug stability and excipient compatibility are important issues in the pharmaceutical development process. It is well known that environmental factors (e.g. temp., RH etc.) can affect the stability, and hence bioavailability, of drug formulations. The choice of formulation components can have a dramatic effect on drug stability and bioavailability. Pharmaceutics is faced with the challenge of rapidly developing formulations exhibiting long term stability and bioavailability without the benefit of supporting long term data at ambient conditions. Early stability studies are usually carried out at elevated temps. (typically up to 60 °C) over several weeks to months in order est. long term stability at ambient conditions by extrapolation. The reliability of extrapolation from stressed conditions and significant time delay are inherent problems with this approach. A series of microcalorimetric expts. were performed to assess the compatibility of a variety of common pharmaceutical excipients. A method for sample prepn. was developed which involved milling/mixing, pre-**equilibrating**, and **calorimetric** anal. The microcalorimetric method was shown to give good reproducibility for small quantities of material (typically 100 mg). For binary mixts., a milling/mixing process is important in reducing particle size, inducing intimate contact between mixt. components, and providing sample homogeneity. Stress conditions of 50 °C and 75% RH were chosen for initial compatibility screening in order to allow sensitive operation of the **calorimeter** while providing a more favorable environment for potential **reactions** to take place. Excipient mixts. were qual. assessed for compatibility (i.e. compatible or incompatible) based on obsd. **reaction** heat criteria.

L12 ANSWER 129 OF 187 BIOSIS on STN
AN 1994:251328 BIOSIS
TI A **microplate** assay for sialidase activity using plant lectin binding to N-acetyllactosamine.
AU Onodera, Satoshi
CS Dep. Clinical Chem., Showa Coll. Pharmaceutical Sci., Machida, Tokyo

194, Japan
SO Biological and Pharmaceutical Bulletin, (**1994**) Vol. 17, No. 1, pp. 29-33.
AB This paper presents a sensitive assay for sialidase activity based on the specific binding of lectin to N-acetyllactosamine. The substrate used for sialidase assay if fetuin (30-100 ng/50 mu-l) with sialilated oligosaccharides, which was then coated on a 96-well **microtiterplate**. After removing sialic acids from the terminal positions of the glycoconjugate glycans by sialidase, it was subjected to biotin-labeled lectin (Ricinus communis agglutinin 120), which binds specifically to N-acetyllactosamine. This was followed by the addition of a peroxidase conjugated avidin-biotin complex. The amount of bound peroxidase was determined by a **calorimetric** assay. The sensitivity was enhanced 1000- to 10000-fold compared to the colorimetric assay using a synthetic substrate such as 2-O-(p-nitrophenyl)-N-acetyl-alpha-D-neuraminic acid (PNPN). In the established method, only very small amounts of substrate and sialidase were required; therefore, it can be applied to the quantitative assay of some sialidases from Vibrio cholerae, streptococcus, the influenza virus and rat liver.

L12 ANSWER 147 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 111:20262 CA
TI A stopped-flow mixer device for a batch microcalorimeter application to the NAD-NADase **reaction**
AU Berger, R. L.; Mudd, C. P.; Clem, T.; Kolobow, T.; Beile, E.; Simons, P. C.; Michel, S.; McClintock, W.
CS Lab. Tech. Dev., Natl. Heart, Lung, Blood Inst., Bethesda, MD, 20892, USA
SO Journal of Biochemical and Biophysical Methods (**1989**), 18(2), 113-24
AB A new model polypropylene, diamond-like C (DLC)-coated mixing cell was developed for use in the batch microcalorimeter. Reagent vol. can be varied from 25 to 100 μL. A 10-μcal **reaction** heat can be measured to 5%. Repeat **reactions** can be done as often as every 10 min for a fast **reaction**. **Reactions** can be started ≤1 h after loading. A pre-**equilibrator** and a temp.-controlled syringe drive unit permit solns. to be stored at 4° while being run at -20 to 40°. The kinetics and enthalpy of **reaction** of NAD-NADase were measured. ΔH Is □21 kcal/mol endothermic.

L12 ANSWER 148 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 113:30230 CA
TI Development of an analytical **reaction** microcalorimeter
AU Cooke, Samuel L., Jr.; Kumar, David D.
CS Dep. Chem., Univ. Louisville, Louisville, KY, 40292, USA
SO Analytical Instrumentation (New York) (**1989**), 18(2), 91-105
AB The design, development and calibration of a novel anal. **reaction** microcalorimeter is described. The instrument uses a modified Teflon stopcock as the **reaction** chamber, an aluminum block with built-in syringes as the equil. chamber and a thermistor bead as the detector. Operational amplifiers are used for signal amplification. The **reaction** of two thermally **equilibrated** reagents occurs inside the **reaction** chamber. Using microliter quantities of reagents, the microcalorimeter is sensitive to energy changes in the order of millicalories per mol.

L12 ANSWER 152 OF 187 BIOSIS on STN
AN 1986:415309 BIOSIS
TI MICROCALORIMETRIC INVESTIGATION OF METABOLISM IN RAT HEPATOCYTES CULTURED ON **MICROPLATES** AND IN CELL SUSPENSIONS.
AU NASSBERGER L [Reprint author]; JENSEN E; MONTI M; FLOREN C-H
CS RES DEP 1, UNIV HOSP, LASARETTET LUND, 221 85 LUND, SWEDEN
SO Biochimica et Biophysica Acta, (**1986**) Vol. 882, No. 3, pp. 353-358.
AB In the present work, heat production rate in rat hepatocytes has been measured by use of thermopile heat conduction **calorimeters**. Both hepatocytes cultured in monolayers on **microplates** and hepatocytes in suspensions were used for microcalorimetric measurements. The highest heat production rate was found in newly cultured cells; thereafter, a gradual decrease was noted. After 1 day of culture, metabolic activity had reached a steady state that lasted about 4 days. A cell-density dependence of heat production was found, both in cell suspensions and in cultured hepatocytes on **microplates**. Higher cell concentration in the **calorimeter** ampoule was accompanied by decreasing heat production per cell. The heat output recorded for hepatocytes cultured on **microplates** (25 · 103 cells) was found to be 0.327 ± 0.13 nW per cell after 24-28 h. Addition of sodium azide and sodium fluoride to tissue culture medium reduced heat production rate in cultured hepatocytes by 60 and 20%, respectively. Recording of heat production with the present **calorimetric** technique is relatively simple and fast, and offers the possibility to perform measurements in small samples of cultured hepatocytes on **microplates**, thus allowing long-term as well as repeated measurements on the same cell population.

L12 ANSWER 160 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 98:114761 CA
TI A fully automated microinjection system for the LKB batch microcalorimeter
AU Minter, B. A.; Talibudeen, O.
CS Rothamsted Exp. Stn., Harpenden/Herts., AL5 2JQ, UK
SO Laboratory Practice (**1982**), 31(11), 1094-6
AB Details are given of the construction and operation of a fully automatic device for the injection of 5.29 μL of soln., mixing and **equilibration** of **reactants**, and recording of **reaction** heats in an LKB batch microcalorimeter. Up to 31 injections, 6 mixes/injection, and 30 h continuous operation are possible without attention.

L12 ANSWER 161 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 98:41736 CA
TI Design and performance of a glass **reaction calorimeter**
AU Cronin, John P.; Pepper, David C.; Ryan, Bernard
CS Chem. Lab., Trinity Coll. Dublin, Dublin, Ire.
SO Chemistry & Industry (London, United Kingdom) (**1982**), (19), 775-7
AB Design features of a glass **reaction calorimeter** were examd. for **reactions** having t1/2 □ a few s. The thermal characteristics of a glass **calorimeter** are time dependent: distortions for **reactions** of t1/2 ≥3 s were not serious. For faster **reactions**, distortions arising from overrun can be allowed for approx., but initial time-lags are unavoidable if the sensor is protected by glass sheathing; errors from

this source are to some extent compensated for by errors from slow **equilibration**. The **equilibration** involves only the parts of the **calorimeter** in direct contact with the liq. **reaction** medium: reproducible stirring is therefore an important design factor.

L12 ANSWER 162 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 97:45381 CA
TI Design and testing of a **microtitration** assembly for use with an LKB Batch Microcalorimeter
AU Beezer, A. E.; Hunter, W. H.; Lipscombe, R. P.; Newell, R. D.; Storey, D. E.
CS Chelsea Coll., Univ. London, London, SW3 6LX, UK
SO Thermochimica Acta (**1982**), 55(3), 345-9
AB A twin, automatic **microtitration** assembly suitable for use with an LKB Batch Microcalorimeter is described. The app., which can accurately and reproducibly deliver vols. as low as 1 μL, permits up to 20 titrn. addns. to be made. It has been tested by the detn. of the heat of ionization of water at 303.15 ± 0.01 K. The value detd. compares favorably with the "best" value reported in the literature.

L12 ANSWER 166 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 90:35796 CA
TI An improved method for obtaining thermal titration curves using micromolar quantities of protein
AU Beaudette, Norman V.; Langerman, Neal
CS Dep. Chem. Biochem., Utah State Univ., Logan, UT, USA
SO Analytical Biochemistry (**1978**), 90(2), 693-704
AB Two simple modifications of a com. available microcalorimeter allow rapid and accurate **equilibration** of sample with titrant and result in increased sensitivity. The modifications permit the rapid **equilibration** of the **reaction** vessel vapor space with solvent vapor and unambiguous detn. of the temp. difference between the thermostat and the contents of the **reaction** vessel. A procedure is described for performing a thermal titrn. under conditions in which the system is undergoing a continuous thermal drift. The procedure is used to det. the std. enthalpy and free energy changes for the binding of ADP to bovine liver glutamate dehydrogenase. Only 0.3 μmol of protein sample was required. The obsd. values ($\Delta H^{\circ\prime}$ = -13.0 kcal mol-1, $\Delta G^{\circ\prime}$ = -7.4 kcal mol-1) agree within 5% of the values detd. by S. Subramanian et al (1975).

L12 ANSWER 168 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 87:137676 CA
TI Precision titration mini-**calorimeter**
AU Ensor, Dale; Kullberg, Lennart; Choppin, Gregory
CS Dep. Chem., Florida State Univ., Tallahassee, FL, USA
SO Analytical Chemistry (**1977**), 49(12), 1878-9
AB The design and operational characteristics of a soln. titrn. **calorimeter** of 3-5 mL are described. The **calorimeter** uses Peltier cooling; has rapid response and **equilibration** with a sensitivity of □1 × 10-5°. Data are presented from the **calorimeter** for an acid-base titrn. and for metal-ligand stepwise complexation.

L12 ANSWER 171 OF 187 BIOSIS on STN

AN 1977:110731 BIOSIS
TI MICRO **CALORIMETER** ADAPTATION FOR MEASUREMENT OF HEATS OF ADSORPTION AT SOLID SOLUTION INTERFACES.
AU HARTER R D; KILCULLEN B M
SO Soil Science Society of America Journal, (**1976**) Vol. 40, No. 4, pp. 612-614.
AB The sensitivity of the Calvet Microcalorimeter makes feasible the measurement of very small heats of **reaction**. This capability is particularly useful when studying adsorption **reactions** at solid-solution interfaces. The instrument must be specially adapted for measurements of this type, since it contains no provision for **equilibration** and mixing of separate solutions. Previously developed adaptations of the instrument are not satisfactory because they either do not stir the combined solutions adequately to overcome flocculation problems or their mechanical energy input is high. An instrument has been developed whereby 2 solutions can be **equilibrated** in the **calorimeter** cell, then mixed and stirred with a net mechanical energy input of -2 ± 0.4 mcalories. This instrument makes possible the precise measurement of very small heats of **reaction**.

L12 ANSWER 176 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 70:109699 CA
TI Thermochemistry of fluorine compounds. II. **Reaction calorimetry** in bromine trifluoride
AU Richards, G. W.; Woolf, Alfred A.
CS Bath Univ. Technol., Bath, UK
SO Journal of the Chemical Society [Section] A: Inorganic, Physical, Theoretical (**1969**), (7), 1072-6
AB Heats of **reaction** of BrF3 solns. contg. Br with Mo, KIO3, K2S2O8, and KBr have been measured. The addn. of Br together with its pre-**equilibration**, was necessary to control the thermal effects of forming other Br fluorides. A consistent value for the heat of formation of the **reactive** species in soln. was obtained which can be applied to det. unknown heats of formation. Arguments are advanced for BrF3 as the **reactive** entity in soln., but the validity of the method does not depend on this assumption. The heats of formation of KIO3 and K2S2O8 have been redetd. to ensure internal consistency.

L12 ANSWER 177 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 71:35625 CA
TI Analytical application of microcalorimetry
AU Pennington, Sam N.; Brown, Harry Darrow; Patel, Anil B.; Chattopadhyay, S. K.; Berger, Robert Lewis
CS Biochem. Sect., Cancer Res. Center, Columbia, MO, USA
SO Analytical Letters (**1969**), 2(5), 247-57
AB A bench-top microcalorimeter has been designed and constructed. This instrument, and a more conventional microcalorimeter previously described, have been applied to several anal. detns. including both inorg. and enzymatic **reactions**. Because of the stability, yet rapid **equilibration** time of the bench-top **calorimeter**, multiple analyses can be performed. The ease of operation, nearly universal applicability, and the possibility of obtaining thermodynamic as well as kinetic data simultaneously, make this technique extremely useful.

L12 ANSWER 178 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 72:106717 CA
TI Construction and operation of a benchtop four-element instrument for analytical microcalorimetry
AU Pennington, Sam N.; Brown, Harry Darrow
CS Biochem. Sect., Cancer Res. Center, Columbia, MO, USA
SO Chemical Instrumentation (New York) (**1969**), 2(2), 167-76
AB A benchtop microcalorimeter has been designed, constructed, and applied to detns. which include both inorg. and enzymic **reactions**. The exceptional stability and short **equilibration** time of the **calorimeter** have made possible its use for multiple analyses with facility. Ease of operation, nearly universal applicability, and readout in thermodynamic values, as well as the simultaneous availability of "kinetic" data make this instrument useful in anal. chemistry. The measurement of **reaction** ΔH provided directly by the instrument is widely applicable in anal. because enthalpy changes during the course of chem. **reaction** are universal with only most occasional exception.

L12 ANSWER 180 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 68:84830 CA
TI Differential microcalorimeter for biochemical **reaction** studies
AU Berger, Robert Lewis; Chick, Yu-Bing Fok; Davids, Norman
CS Lab. of Tech. Develop., Nat. Heart Inst., Bethesda, MD, USA
SO Review of Scientific Instruments (**1968**), 39(3), 362-8
AB A differential soln. microcalorimeter with a mixing system is described. Up to 1 ml. of reagent A may be mixed with up to 3 ml. of reagent B in less than 1 sec. with a heating artifact of less than 0.5 mcal. A temp. range of 0 to 40° has been utilized with a 2 hr. temp. **equilibration** time. The time course of biochem. **reactions** has been followed for up to 1 hr. Computer stimulation of the **calorimeter** permits data correction for heat cond. losses. For **reaction** heats greater than 25 mcal., ΔH and the rate const. of the **reaction** may be detd. to ±2%. Detectivity is ±20 microcal. A digital computer simulation technique based on a finite-element anal. of heat cond., which is of general applicability, was developed to correct the output data for heat cond. losses.

L12 ANSWER 181 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 68:43804 CA
TI Microcalorimeter especially suited for the study of small quantities of materials
AU Evans, William John; McCourtney, Emile J.; Carney, William B.
CS Seed Protein Pioneering Res. Lab., New Orleans, LA, USA
SO Analytical Chemistry (**1968**), 40(1), 262-4
AB An improved form of the **calorimeter** described earlier by E. and C. is presented which possesses the following improvements: □1-hr. **equilibration** time, Peltier compensation, redn. in the size of the **calorimeter** and in the amt. of materials required for its operation, ability to mix equal vols. of reagents, and automatic integration of the emf.-time curves. Elec. calibration data are tabulated as well as chem. calibration data based on the heat of neutralization of HCl with NaOH. The **calorimeter** is sufficiently stable that **reactions** exceeding several hrs. duration can be followed.

L12 ANSWER 185 OF 187 CA COPYRIGHT 2007 ACS on STN
AN 60:27669 CA
OREF 60:4882c-d
TI Design and testing of a **reaction calorimeter** for enthalpy studies on complex formation
AU Gerding, P.; Leden, I.; Sunner, S.
CS Univ. Lund, Swed.
SO Acta Chemica Scandinavica (**1963**), 17(8), 2190-8
AB A const. temp. environment **reaction calorimeter** equipped with a device for the successive addn. of known varying amts. of a soln. contg. either a metal ion or ligand is described in detail. The system is elec. calibrated and the temp. is measured with a thermistor. After each single expt. the **calorimeter** is brought back to the initial temp. by blowing a pre-cooled gas through a built-in cooler. Test measurements of the heat of neutralization of KOH by HCl, the heat of soln. of KCl, and the heat of diln. of HCl gave satisfactory agreement with literature data. The temp. sensitivity is ±1 × 10-4 degrees, corresponding to an accuracy of ±0.02 cal. or ±0.2% of the heat of **reaction**, which ever is larger. The time of **equilibration** of the system is <3 min.

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